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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,020

12/16/2005

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Q91914

3855

23373 7590 02/14/2008  
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EXAMINER

CHARLES, MARCUS

ART UNIT

PAPER NUMBER

3682

MAIL DATE

DELIVERY MODE

02/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,020	<b>Applicant(s)</b> UEDA ET AL.	
	<b>Examiner</b> Marcus Charles	<b>Art Unit</b> 3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12-16-2005 &amp; 8-17-2007</u> .                              | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

This is the first action relating to serial application number 10/516,020 filed 12/16/2005.

Claims 1-11 are currently pending.

#### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Drawings***

2. The examiner has accepted the drawing filed with this application as formal drawing.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 4, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (04-39424) applicant's prior art. JP (04-39424) discloses a roller bearing (1) as claimed in fig. 1. However, the JP (04-39424) does not disclose the average roughness Ra of the outer ring (20) raceway surface (22) is set within a range  $0.1\mu\text{m} \leq \text{Ra} \leq 0.5\mu\text{m}$  and the interval between the neighboring peaks of the roughness is set within  $0 < S \leq 20\mu\text{m}$  such that roughness parameter S is define by

$$S = \frac{1}{n} \sum_{i=1}^n S_i$$

However, JP (04-39424) discloses the roughness of the outer ring raceway surface is  $0.083\mu\text{m}$  and lower than  $0.15\mu\text{m}$  and the roughness of the inner ring raceway surface is  $0.107\mu\text{m}$  and larger than  $0.1\mu\text{m}$  and lower than  $0.15\mu\text{m}$  which is within the scope of the claimed invention. JP (04-39424) also, discloses a reason for such values is for improving the service life of the bearing. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of JP (04-39424) so as to include the mathematical equation, inequality as set forth in claimed, since it has been held that where the general conditions of a claim is disclosed in the prior art, discovering the optimum ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

5. Claims 3, 5 and 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (04-39424) in view of JP (2002-339989) applicant's prior art. JP (04-39424) fails to disclose a difference of a retain austenite content between the rolling elements and at least one of the inner and outer rings is set to 3% or more in the volume ratio. JP (2002-3399879) discloses the use of an austenite quantity in the inner and outer races and the rolling for improving the life time of the bearing. JP (2002-339989) also discloses the austenite volume in the inner and outer races is set between 6-12%, and the austenite volume in the rolling bearing is between 4-12%. Therefore, difference in the volume ratio between anyone of the races and the rolling bearing when the austenite in the races is 12% and when the austenite volume in the rolling bearing is 4% will be greater than 3%.

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (04-39424) in view of Sumita et al. (4,916,751). JP (04-39424) fails to disclose the outer ring raceway surface has machining traces that intersect each other. Sumita et al. disclose a bearing inner raceway (3) and outer raceway (1) has machining surfaces (5) that intersect formed by super finishing thereby increasing the longevity by retaining lubrication oil film on the finished surface. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the raceways of JP (04-39424) so that the surfaces are machined in view of Sumita et al. in order to increase the longevity by retaining lubrication oil film on the finished surface.

***Citation***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Note the prior art cited in attached PTO Form 892.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus Charles whose telephone number is (571) 272-7101. The examiner can normally be reached on Monday-Thursday 7:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ridley Richard can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marcus Charles/  
*Marcus Charles*  
Primary Examiner, Art Unit 3682